The Treatment of Serpiginous Ulcer of the Cornea

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THE TREATMENT OF SERPIGINOUS ULCER OF THE CORNEA.*

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More than twenty years have now passed since I first observed that certain cases of serpiginous ulcer of the cornea, in which no further progress was noticed after they came into my hands, presented the features I am about to describe, and since then I have not seen a case in which they were present that did not heal under very simple treatment.

From the margin of the ulcer straight or nearly straight lines, broadest at the ulcer and gradually tapering, diverge in all directions somewhat obliquely, through the parenchyma of the deepest layer. They never give off branches. The further end of these diverging lines are connected by grayish intermediate striæ, of the same width throughout, and running at right angles to them. If present all around these intermediate linear opacities form a complete ring of the same form as the margin of the ulcer, but situated more deeply, and 3 or 4 mm. distant from it. Sometimes a smaller ring is seen between the outer ring and the margin of the ulcer. The cornea between the opaque linear opacities here described is cloudy but that outside of the outer ring is usually of normal transparency.

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An ulcer situated in the central part of the cornea with these striæ well developed, may be compared in appearance with a spider's web. In all of the cases of this kind seen by me the ulcer was at least 5 days old. I have never seen the picture develop in cases under treatment. The opaque lines gradually disappeared as the ulcer filled up. A few years ago, I made no microscopic examination of the exudation on the ulcer, but have done so recently, and while I have found the pneumococcus usually present in the progressive cases, I have been able to find but few in any one of the cases presenting the above-described features. I think I am justified in assuming that the ulcer in these cases has ceased to be progressive and that any treatment which involves further destruction of tissue, or the danger of anterior synechiæ is entirely unnecessary and should be dispensed with. I feel so sure of this that even in the cases in which blennorrhea of the sac was present I have done nothing more in the way of surgical procedures than to split the canaliculus. In these cases the symptoms of irido-cyclitis are usually not very severe, and the hypopion rarely fills more than the lower third of the anterior chamber. As I have already said, such cases always got well, and the only treatment required was warm fomentation with boric acid solution and instillations of a mydriatic. In all cases I was able to break up the posterior synechiæ by a 1 or 2 per cent. solution of sulphate of atropin, repeated often during the first day and less frequently after that. In most cases I have tried to expedite the complete cicatrization of the ulcer by gentle massage with a salve containing a small quantity of the yellow oxid of mercury.

The opaque striæ here described and regarded by me as an evidence of the arrest of progress, were first described, so far as I know, by Saemisch[1] in his famous chapter on the diseases of the cornea, and von Michel[2] in his description of the serpiginous ulcer of the cornea

corroborates what Saemisch has said about them. Both of these authors describe the linear opacities as of common occurrence in such ulcers, but neither of these writers looks upon them as a sign that the ulcer has entered the retrogressive stage. I have seen these linear opacities so often that it seems exceedingly strange to me that men of such large experience as Fuchs,[3] Schirmer[4] and Vossius[5] have never seen the intermediary lines encircling the margin of the ulcer. I may mention here that I have been unable to find any reference to these linear opacities in the description of serpiginous ulcer in any American text-book. Whether or not the diverging opaque lines are due to folds in Descemet's membrane, as Schirmer seems to think, or are due to cell infiltration, as is held by Schmidt-Rimpler,[6] I do not know; their similarity in appearance to the opaque lines diverging from the corneal wound sometimes seen after cataract extraction, can not be denied, but I have never seen in such cases the ends of the lines connected by the intermediary linear opacities. To me the diverging linear opacities have always seemed to extend obliquely to the inner layer of the cornea, although Schirmer says that they are all in the same plane and in the deepest layer. I may say here, in passing, that I have seen precisely the same picture in cases of so-called abscess of the cornea, and in these cases also no further progress was noticed after the development of the linear opacities.

With regard to the treatment of the cases of serpiginous ulcer of the cornea in which the linear opacities above described were not present, I shall only say that I have given up Saemisch's incision, and rely almost entirely on cauterization by means of the galvano-cautery, for the arrest of the disease. Unless the ulcer is situated in the center and is more than 4 mm. in size, has a broad yellowish-white, raised arc or several small ones, and the symptoms of iridio-cyclitis are very severe

(large hypopion), I delay the cauterization for a day or two, use compresses wet with a warm solution of boric acid continuously, instill a solution of atropin, and perhaps dust some finely pulverized iodoform on the ulcer once daily. Lately I have used, with apparent advantage, an ointment composed of bichlorid of mercury 1 part to 500-1000 parts of the sterilized vaselin. If the injection of the ocular conjunctiva is intense and the patient suffers great pain, I abstract blood from the temple, either by natural leeches or by the artificial leech. If I find micrococci in the advancing arc of the ulcer, or if the ulcer continues to spread under the treatment outlined, I use the galvano-cautery after having ascertained the extent of the ulcer by the instillation of fluorescin, and burn away the advancing arc as far as the greenish discoloration extends, and if the ulcer is very deep in any part, or the pupil has not dilated under the use of atropin or I think that the tension of the eye is above the normal, I perforate the deepest part of the floor of the ulcer at the same time. If, after a day or two, further advance of the yellowish arc is noticed I repeat the cauterization, but I have not been obliged to do this often since I destroy the corneal tissue as far as the greenish color, due to the fluorescin, extends. In cases in which the ulcer did not extend very deeply, but the irido-cyclitis was severe, I have sometimes made a paracentesis at the corneal margin with a veiw to reducing the intraocular tension and not for the purpose of evacuating the hypopion, which I regard as unimportant so far as the healing is concerned; but I do not think that these cases did as well as those in which I perforated with the galvano-cautery. The after-treatment is the same as in the milder cases already detailed. I have found that in cases of great pain due to the irido-cyclitis, relief has often followed the administration of salicylate of sodium and more recently the use of aspirin in 10-grain doses. Support-

ing treatment is, of course, required in nearly all cases. An examination of the urine should be made in all cases as soon as they come under observation, as I have found that in almost all of the cases in which the progress of the ulcer could not be arrested the patient either suffered from diabetes or nephritis. Treatment of these affections, if present, is of course required. In many of my bad cases I have noticed that the irido-cyclitis persisted in spite of all treatment, even while the ulcer was healing, and in some ended with closure of the pupil and secondary glaucoma, and in others cataract was developed. In nearly all of these cases the ulcer did not perforate, and no artificial opening was made, and I am under the impression that the artificial perforation, either by galvano-cautery or the knife, has a good effect not only on the ulcer but also on the irido-cyclitis, and I would recommend its performance in all cases in which the irido-cyclitis is at all severe.

With regard to the treatment of the blennorrhea of the sac which is so often present in these cases, I have nothing new to offer. I usually split the canaliculus, and if the secretion is very profuse syringe the sac with a solution of bichlorid of mercury, 1:1000, once or twice daily. Otherwise I simply have the patient press the contents out of the sac every few hours. In a few cases in which a phlegmon of the sac was present I incised the sac and packed it with iodoform. I have never found it necessary to extirpate the sac in such cases while under treatment of the ulcer, although others have highly recommended this procedure. Attention to the nose, if disease is present should, of course, not be neglected. The presence or absence of the pneumococci in cases of ulcerus serpens is, according to Nellhagen,[7] of great importance so far as treatment is concerned. According to this writer the cauterization and other active treatment is required only if they are present. In three cases of large ulcers with iritis and hypopion and

in one, which was, moreover, complicated by blennorrhea of the sac, in which the pneumococci could not be found, the progress of the disease was arrested under warm application and atropin.

Dr. Paul Roemer,[8] in a very interesting article recently published, holds out the hope that we shall soon possess a serum of the pneumococci, which will arrest the progress of the ulcer, when injected subcutaneously and applied locally and thus do away with the cautery which must of necessity increase the loss of substance and thereby increase the size of the resulting cicatrix. That he may succeed in giving us a serum that will accomplish this, and thus become a great benefactor of mankind is certainly the devout wish of all who know how often our present means fail to arrest the disease before much harm is done.

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